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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/595,375

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Shinichiro Yamada

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EXAMINER

TAYLOR II, JAMES W

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

12/23/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/595,375	Applicant(s) YAMADA ET AL.	
	Examiner James W. Taylor II	Art Unit 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

1. All outstanding objections and rejections not maintained below are withdrawn in light of applicant's amendment filed 8/29/2008.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior office action.
3. New grounds of rejection are set forth below. Thus, the following action is made NON-FINAL.

Double Patenting

4. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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5. Claims 1-18 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 1-13 of U.S. Patent No. 7,439,283 in view of Kondo *et alli* (US 5,593,778), Shimatzu Corp. (JP 2002-105298 A), Whuk *et alli* (US 5,939,467), Ida *et alli* (US 6,337,031), and Allcock (Allcock, Harry R.; Lampe, Frederick W.; Mark, James E. CONTEMPORARY POLYMER CHEMISTRY, 3rd ed. New Jersey, Pearson Education, 2003. pp. 545-548.).

6. US Pat. No. '283 claims a resin composition comprising 100 parts polylactic acid, 50 to 150 parts metal hydroxide coated in silane coupling agent (claim 2), and its composition as a molded article (claims 5-8 and 12).

7. US Pat. No. '283 fails to claims the physical properties of the instant invention.

8. Regarding the claimed impact resistance, the courts have stated that those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in the application defines an obvious variation of an invention claimed in the patent. See *In re Vogel*, 422 F.2d 438, 441-42, 164 USPQ 619, 622 (CCPA 1970) and MPEP 804 (II) (B) (1). US Pat. No. '283 teaches that the heat-resistant injection-molded article according to the present invention preferably has an Izod impact resistance of not less than 10 kJ/m² (c. 9, ll. 52-59).

9. Regarding the claimed deflection temperature under load (i.e., heat resistance), Kondo teaches that polylactic acid imparts heat resistance to a composition (c. 7, ll. 6-11). Therefore, US Pat. '283 inherently meets the claimed limitation. Alternatively, the amount of polylactic acid present in the formulation would be expected to directly

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contribute to the heat resistance. As such, the amount of polylactic acid and the heat resistance are result effective variables. Optimization of result effective variables through routine experimentation is not a patentable distinction. See *In re Beosch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) and MPEP 2144.05 (II) (B). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to claim the claimed deflection temperature under load.

10. Regarding the claimed flame retardancy, US Pat. No. '283 explicitly claims its composition as a flame retardant composition. As such, it would clearly be desired and obvious to claim a flame retardancy that meets the instant claims.

11. Regarding the claimed polylactic acid and polyester copolymer additive, Shimatzu explicitly teaches aliphatic polyester plasticizer (par. 8-9). Shimatzu fails to disclose the addition of a copolymer of a polyester and lactic acid, present in a range of 10 to 40 wt. %. Allcock teaches that copolymers break up crystallinity compared to mixtures of their homopolymer counterparts, making said copolymers more elastomeric and rubbery (p. 546, ll. 5-7). Ultimately, one of ordinary skill in the art would expect a more rubbery compound to be characterized by a higher impact resistance and being less brittle. As such, it would have been obvious at the time of invention to copolymerize Shimatzu's "main component" (i.e. poly lactic acid) into Shimatzu's additive "(c)" in an amount appropriate to the desired impact resistively, thereby forming the applicant's limitation (c) so that one will have a more impact resistive and less brittle resultant polymer.

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12. Regarding the claimed aromatic-aliphatic polyester and ester, Shimatzu teaches dimethyl phthalate (par. 15) in 5 to 25 wt. % (par. 18). The applicant's claimed range of 0.01 to 5 wt. % ester slightly overlaps Shimatzu's corresponding dimethyl phthalate at 5 to 25 wt. % (par. 18). Therefore, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made, since it has been held that choosing the overlapping portion, of the range taught in the prior art and the range claimed by the applicant, has been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 USPQ 549. Wnuk takes that a aromatic-aliphatic polyesters have good biodegradability, which could enhance Shimatzu to create a more biodegradable resin. As such, one of ordinary skill in the art has motivation to add aromatic-aliphatic polyesters to Shimatzu's composition in an amount relative to the biodegradability desired to create a more biodegradable product. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to add aromatic-aliphatic polyesters to Shimatzu's composition to create a more biodegradable composition.

13. Regarding the particle size of the metal (i.e., aluminum) hydroxide particles, Ida uses aluminum hydroxide particles as heat resistant particles, wherein the particles should be between 1 and 4 microns. By using Ida's particle size, one would expect that increased heat-resistance. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use an average particle size of 1-4 microns micron for the aluminum hydroxide particle.

14. Given that US Pat. No. '283 uses open claim language (i.e., "comprising"), it would have been obvious to one of ordinary skill in the art at the time of the invention to make the above modifications, thereby arriving at the instant claims.

15. Claims 1- 18 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-8 of copending Application No. 11/575823 in view of Kondo *et alli* (US 5,593,778), Shimatzu Corp. (JP 2002-105298 A), Wnuk *et alli* (US 5,939,467), Ida *et alli* (US 6,337,031), and Allcock (Allcock, Harry R.; Lampe, Frederick W.; Mark, James E. CONTEMPORARY POLYMER CHEMISTRY, 3rd ed. New Jersey, Pearson Education, 2003. pp. 545-548.).

16. US appl. '823 claims a resin composition comprising 100 parts polylactic acid, 50 to 100 parts metal hydroxide coated in silane coupling agent (claim 2), and its composition as a molded article (claims 4-6 and 8).

17. US appl. '823 fails to claims the physical properties of the instant invention.

18. Regarding the claimed impact resistance, Shimatzu teaches that a bulking agent can be used to improve the impact resistance of a resin (par. 12). One would have motivation to use Shimatzu's bulking agent to make an article molded from US appl. '823's invention less brittle. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use Shimatzu's suggested bulking agents in US appl. '823's invention given the open nature of the claims.

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19. Regarding the claimed deflection temperature under load (i.e., heat resistance), Kondo teaches that polylactic acid imparts heat resistance to a composition (c. 7, ll. 6-11). Therefore, US appl. '823 inherently meets the claimed limitation. Alternatively, the amount of polylactic acid present in the formulation would be expected to directly contribute to the heat resistance. As such, the amount of polylactic acid and the heat resistance are result effective variables. Optimization of result effective variables through routine experimentation is not a patentable distinction. See *In re Beosch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) and MPEP 2144.05 (II) (B). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to claim the claimed deflection temperature under load.

20. Regarding the claimed flame retardancy, the courts have stated that those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in the application defines an obvious variation of an invention claimed in the patent. See *In re Vogel*, 422 F.2d 438, 441-42, 164 USPQ 619, 622 (CCPA 1970) and MPEP 804 (II) (B) (1). US appl. '823 teaches that the invention is a flame retardant composition. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to claim a maximized flame retardancy.

21. Regarding the claimed polylactic acid and polyester copolymer additive, Shimatzu explicitly teaches aliphatic polyester plasticizer (par. 8-9). Shimatzu fails to disclose the addition of a copolymer of a polyester and lactic acid, present in a range of 10 to 40 wt. %. Allcock teaches that copolymers break up crystallinity compared to

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mixtures of their homopolymer counterparts, making said copolymers more elastomeric and rubbery (p. 546, ll. 5-7). Ultimately, one of ordinary skill in the art would expect a more rubbery compound to be characterized by a higher impact resistance and being less brittle. As such, it would have been obvious at the time of invention to copolymerize Shimatzu's "main component" (i.e. poly lactic acid) into Shimatzu's additive "(c)" in an amount appropriate to the desired impact resistively, thereby forming the applicant's limitation (c) so that one will have a more impact resistive and less brittle resultant polymer.

22. Regarding the claimed aromatic-aliphatic polyester and ester, Shimatzu teaches dimethyl phthalate (par. 15) in 5 to 25 wt. % (par. 18). The applicant's claimed range of 0.01 to 5 wt. % ester slightly overlaps Shimatzu's corresponding dimethyl phthalate at 5 to 25 wt. % (par. 18). Therefore, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made, since it has been held that choosing the overlapping portion, of the range taught in the prior art and the range claimed by the applicant, has been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 USPQ 549. Wnuk takes that a aromatic-aliphatic polyesters have good biodegradability, which could enhance Shimatzu to create a more biodegradable resin. As such, one of ordinary skill in the art has motivation to add aromatic-aliphatic polyesters to Shimatzu's composition in an amount relative to the biodegradability desired to create a more biodegradable product. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to add

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aromatic-aliphatic polyesters to Shimatzu's composition to create a more biodegradable composition.

23. Regarding the particle size of the metal (i.e., aluminum) hydroxide particles, Regarding the particle size of the metal (i.e., aluminum) hydroxide particles, Ida uses aluminum hydroxide particles as heat resistant particles, wherein the particles should be between 1 and 4 microns. By using Ida's particle size, one would expect that increased heat-resistance. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use an average particle size of 1-4 microns micron for the aluminum hydroxide particle.

24. Given that US appl. '823 uses open claim language (i.e., "comprising"), it would have been obvious to one of ordinary skill in the art at the time of the invention to make the above modifications, thereby arriving at the instant claims.

25. This is a provisional obviousness-type double patenting rejection.

26. Claims 1-2, 4-12, and 17 are directed to an invention not patentably distinct from claims 1-8 of commonly assigned 10/575823 or of claims 1-13 of commonly assigned 7,439,283. Specifically, see above.

27. The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP Chapter 2300). Commonly assigned 10/575823 and 7,439,283, discussed above, independently would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f)

or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

28. A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

Claim Rejections - 35 USC § 102 / 103

29. Claims 1 and 18 is rejected under 35 U.S.C. 102(b) as being anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Shimatzu Corp. (JP 2002-105298 A).

30. Shimatzu teaches a lactic acid system with an impact resistant of at least 5 kJ/m² (par. 1). The resin contains a metal hydroxide (par. 12) treated with a silane coupling agent ("Silang," par. 13), which is present at 1%-30% by mass of the formulation (par. 12).

31. As noted by the applicant, metal hydroxides are flame retardants (Amendment dated 8/29/2008, p. 9, ll. 3-4; instant specification, p. 2, ll. 18-19). Further, the applicant notes that polylactic acid based resins have improved heat resistance (Amendment dated 8/29/2008, p. 9, ll. 4-6; instant specification, p. 3, ll. 15-24). As Shimatzu

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discloses a lactic acid resin system with a metal hydroxide, these two limitations are inherently met. More evidence of inherency is provided in the instant specification, comparative example 2 presents a similar composition to Shimatzu's composition, without Shimatzu's bulking agent. Comparative example 2 clearly meets the heat resistance and flame retardancy limitation of claim 1. Therefore a similar composition (Shimatzu's composition) would be expected to exhibit similar properties, save having improved impact resistance due to the bulking agent.

32. It is noted that claim 18 uses the language "consisting essentially of". While it is recognized that the phrase "consisting essentially of" narrows the scope of the claims to the specified materials and those which do not materially affect the basic and novel characteristics of the claimed invention, absent a clear indication of what the basic and novel characteristics are, "consisting essentially of" is construed as equivalent to "comprising". Further, the burden is on the applicant to show that the additional ingredients in the prior art, i.e. bulking agents, would in fact be excluded from the claims and that such ingredients would materially change the characteristics of the applicant's invention. See MPEP 2111.03. Moreover, the statement that bulking agents excluded from applicant's invention is a conclusory statement with no evidentiary weight, i.e., attorney's statements are not a substitute for factual evidence. Case law holds that "[i]f an applicant contends that additional steps or material in the prior art are excluded by the recitation of 'consisting essentially of,' applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of applicant's invention." *In re De Lajarte*, 337 F.2d 870, 143 USPQ 256

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(CCPA 1964). Applicant is advised to submit clear and convincing evidence in the form of a declaration that bulking agents would materially affect the basic and novel characteristics of applicant's invention. As further evidence, it is noted that the applicant states "[i]n addition, additives, such as heat stabilizer, antioxidant, UV absorbent, light stabilizer, pigment, and dye, can be prescribed within a range where the effect of the present embodiment is not lost" (emphasis added) (instant specification, p. 11, ll. 1-3; instant specification, p. 20, ll. 25-27). Hence, bulking agents would not appear to affect the material characteristics of the applicant's invention.

33. In light of the above, it is clear that Shimatzu anticipates the presently cited claims.

34. Alternatively, as noted above, polylactic acid is a heat resistant resin; metal hydroxides are flame retardants; and bulking agents will improve the impact resistance of the resin in which it is dispersed. As such, the amount of these three compounds in a formulation are result effective variables. Optimization of result effective variables through routine experimentation is not a patentable distinction. See *In re Beosch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) and MPEP 2144.05 (II) (B). Therefore, it would have been obvious to one of ordinary skill in the art to optimize the formulation using these three components to create a composition with the user's desired characteristics.

Claim Rejections - 35 USC § 103

35. Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimatzu Corp. (JP 2002-105298 A).

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36. Discussion regarding Shimatzu from paragraphs 30-34 above is hereby incorporated into this rejection by reference.

37. The core of the metal hydroxide can be aluminum hydroxide (par. 12), and the silane coupling agent can be beta-(3,4 epoxycyclohexyl) ethyltrimethoxysilane (par. 13). The prior art teaches each of these elements, independently. Therefore, it would have been obvious at the time of the invention to try using these components to make Shimatzu's composition functional.

38. Claims 2, 9, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimatzu Corp. (JP 2002-105298 A) in view of Allcock (Allcock, Harry R.; Lampe, Frederick W.; Mark, James E. CONTEMPORARY POLYMER CHEMISTRY, 3rd ed. New Jersey, Pearson Education, 2003. pp. 545-548.).

39. Discussion regarding Shimatzu from paragraphs 30-34 above is hereby incorporated into this rejection by reference.

40. Shimatzu discloses polyester prepared by a diol/dicarboxylic acid polymerization (par. 8-9) and independently the base polylactic acid resin.

41. Shimatzu fails to disclose the addition of a copolymer of a polyester and lactic acid, present in a range of 10 to 40 wt. %.

42. Allcock teaches that copolymers break up crystallinity compared to mixtures of their homopolymer counterparts, making said copolymers more elastomeric and rubbery (p. 546, ll. 5-7). Ultimately, one of ordinary skill in the art would expect a more rubbery compound to be characterized by a higher impact resistance and being less brittle. As

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such, it would have been obvious at the time of invention to copolymerize Shimatzu's "main component" (i.e. poly lactic acid) into Shimatzu's additive "(c)" in an amount appropriate to the desired impact resistively, thereby forming the applicant's limitation (c) so that one will have a more impact resistive and less brittle resultant polymer.

43. Claims 3, 7, 13, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimatzu Corp. (JP 2002-105298 A) in view of Wnuk *et alli* (US 5,939,467).

44. Discussion regarding Shimatzu from paragraphs 30-34 above is hereby incorporated into this rejection by reference.

45. Shimatzu teaches dimethyl phthalate (par. 15) in 5 to 25 wt. % (par. 18). The applicant's claimed range of 0.01 to 5 wt. % ester slightly overlaps Shimatzu's corresponding dimethyl phthalate at 5 to 25 wt. % (par. 18). Therefore, the subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made, since it has been held that choosing the overlapping portion, of the range taught in the prior art and the range claimed by the applicant, has been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 USPQ 549.

46. Shimatzu fails to teach using an aromatic-aliphatic polyester component.

47. Wnuk takes that aromatic-aliphatic polyesters have good biodegradability, which could enhance Shimatzu to create a more biodegradable resin. As such, one of ordinary skill in the art has motivation to add aromatic-aliphatic polyesters to Shimatzu's composition in an amount relative to the biodegradability desired to create a more

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biodegradable product. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to add aromatic-aliphatic polyesters to Shimatzu's composition to create a more biodegradable composition.

48. Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimatzu Corp. (JP 2002-105298 A) in view of Ida *et alli* (US 6,337,031).

49. Discussion regarding Shimatzu from paragraphs 30-34 above is hereby incorporated into this rejection by reference.

50. The applicant further claims that the metal hydroxide, (b), has a particle size between 0.1 and 5 microns.

51. Shimatzu fails to disclose this particle size range.

52. Ida uses aluminum hydroxide particles as heat resistant particles, wherein the particles should be between 1 and 4 microns. It is noted that Shimatzu intends the aluminum hydroxide as a bulking agent. However, particle size is not critical for Shimatzu's invention as Shimatzu did not necessitate a specific particle size. By using Ida's particle size, one would expect that Shimatzu would become more heat-resistive.

53. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use an average particle size of 1-4 microns micron for the aluminum hydroxide particle in Shimatzu's invention, giving more heat-resistance.

54. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimatzu Corp. (JP 2002-105298 A) in view of Allcock (Allcock, Harry R.; Lampe,

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Frederick W.; Mark, James E. CONTEMPORARY POLYMER CHEMISTRY, 3rd ed. New Jersey, Pearson Education, 2003. pp. 545-548.) as applied to claims 2, 9, and 12 above, in view of Ida *et alli* (US 6,337,031).

55. The applicant further claims that the metal hydroxide, (b), has a particle size between 0.1 and 5 microns.

56. Shimatzu in view of Allcock fails to disclose this particle size range.

57. Ida uses aluminum hydroxide particles as heat resistant particles, wherein the particles should be between 1 and 4 microns. It is noted that Shimatzu in view of Allcock intends the aluminum hydroxide as a bulking agent. However, particle size is not critical for Shimatzu in view of Allcock's invention as Shimatzu did not necessitate a specific particle size. By using Ida's particle size, one would expect that Shimatzu in view of Allcock would become more heat-resistive.

58. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use an average particle size of 1-4 microns micron for the aluminum hydroxide particle in Shimatzu in view of Allcock's invention, imparting more heat-resistance.

59. Claims 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimatzu Corp. (JP 2002-105298 A) in view of Wnuk *et alli* (US 5,939,467) as applied to claims 3, 7, 13, and 16 above, further in view of Ida *et alli* (US 6,337,031).

60. The applicant further claims that the metal hydroxide, (b), has a particle size between 0.1 and 5 microns.

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61. Shimatzu in view of Wnuk fails to disclose this particle size range.

62. Ida uses aluminum hydroxide particles as heat resistant particles, wherein the particles should be between 1 and 4 microns. It is noted that Shimatzu in view of Wnuk intends the aluminum hydroxide as a bulking agent. However, particle size is not critical for Shimatzu in view of Wnuk's invention as Shimatzu in view of Wnuk does not necessitate a specific particle size. By using Ida's particle size, one would expect that Shimatzu in view of Wnuk would become more heat-resistive.

63. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to use an average particle size of 1-4 microns micron for the aluminum hydroxide particle in Shimatzu in view of Wnuk's invention, giving more heat-resistance.

64. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shimatzu Corp. (JP 2002-105298 A) in view of Allcock (Allcock, Harry R.; Lampe, Frederick W.; Mark, James E. CONTEMPORARY POLYMER CHEMISTRY, 3rd ed. New Jersey, Pearson Education, 2003. pp. 545-548.) as applied to claims 2, 9, and 12 above, further in view of Wnuk *et alli* (US 5,939,467).

65. The applicant narrows the range of ester beyond Shimatzu's range. Shimatzu states that below 5 wt. % the effect of the ester plasticizer becomes small (par. 18). It is noted that the reference did not state that the plasticizing effect would be negligible. Further, this range is merely a preferred range. Shimatzu gives one motivation to raise (e.g., more plasticizing effect) and lower (e.g., high amounts of plasticizer lead to an unstable product) the amount of plasticizer. As such, the amount of plasticizer is a

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result effective variable. Optimization of result effective variables through routine experimentation is not a patentable distinction. See *In re Beosch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980) and MPEP 2144.05 (II) (B). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to optimize the amount of plasticizer in the formulation.

66. Shimatzu fails to teach using an aromatic-aliphatic polyester component.

67. Wnuk takes that aromatic-aliphatic polyesters have good biodegradability, which could enhance Shimatzu to create a more biodegradable resin. As such, one of ordinary skill in the art has motivation to add aromatic-aliphatic polyesters to Shimatzu's composition in an amount relative to the biodegradability desired to create a more biodegradable product. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to add aromatic-aliphatic polyesters to Shimatzu's composition to create a more biodegradable composition.

68. Claims 1-18 rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka '283 (US 7,439,283) in view of Shimatzu Corp. (JP 2002-105298 A), Wnuk *et alli* (US 5,939,467), and Ida *et alli* (US 6,337,031).

69. Discussion relating to this rejection can be found above in paragraphs 5-14 and is hereby incorporated into this rejection by reference.

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70. Claims 1-18 rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka '287 (US 2007/0203287 A1) in view of Shimatzu Corp. (JP 2002-105298 A), Wnuk *et alli* (US 5,939,467), and Ida *et alli* (US 6,337,031).

71. It is noted that 2007/0203287 qualifies as prior art under 35 U.S.C. 102(f) due to different inventive entities.

72. Discussion relating to this rejection can be found above in paragraphs 16-21 and is hereby incorporated into this rejection by reference.

Response to Arguments

73. Applicant's arguments filed 8/29/2008 have been fully considered, but arguments are not persuasive. Specifically, applicant argues (i) Shimatzu does not inherently meet the physical limitations of claim 1; and (ii) the instant invention is non-obvious over Shimatzu as the claims do not require a bulking agent to reach similar impact resistances.

74. Regarding argument (i), the rejection under 35 USC 102 has been changed to a rejection under 35 USC 102/103. One of ordinary skill in the art would expect that given the more elaborate rationale in paragraphs 29-34 in the 25 USC 102/103 rejection above, the physical properties are inherent in or obvious over Shimatzu.

75. Regarding argument (ii), the applicant's arguments are non commensurate in scope with the claims. One of ordinary skill in the art would expect that he could arrive at the present claims by using the proposed modifications above. The fact that a bulking agent is used is a moot point, as the claims do not require the absence of a

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bulking agent. The applicant is advised that for this argument to hold any merit, the claims must necessitate the absence of a bulking agent.

Conclusion

76. Any inquiry concerning this communication or earlier communications from the examiner should be directed to James W. Taylor II whose telephone number is (571) 270-5457. The examiner can normally be reached on 7:30 am to 5:00 pm (off every other Friday).

77. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

78. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/James W Taylor II/

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jwt2

/Vasu Jagannathan/
Supervisory Patent Examiner, Art Unit 1796